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Fechamento do estudo NOBLE: angioplastia coronária determina maior taxa de IAM e nova revascularização, do que a revascularização cirúrgica, em lesões de TCE

Percutaneous coronary angioplasty vs. coronary artery bypass grafting in the treatment of unprotected left main stenosis: updated 5-year outcomes from the randomised, non-inferiority NOBLE trial

BACKGROUND

Percutaneous coronary intervention (PCI) is increasingly used in revascularisation of patients with left main coronary artery disease in place of the standard treatment, coronary artery bypass grafting (CABG). The NOBLE trial aimed to evaluate whether PCI was non-inferior to CABG in the treatment of left main coronary artery disease and reported outcomes after a median follow-up of 3·1 years. We now report updated 5-year outcomes of the trial.

METHODS

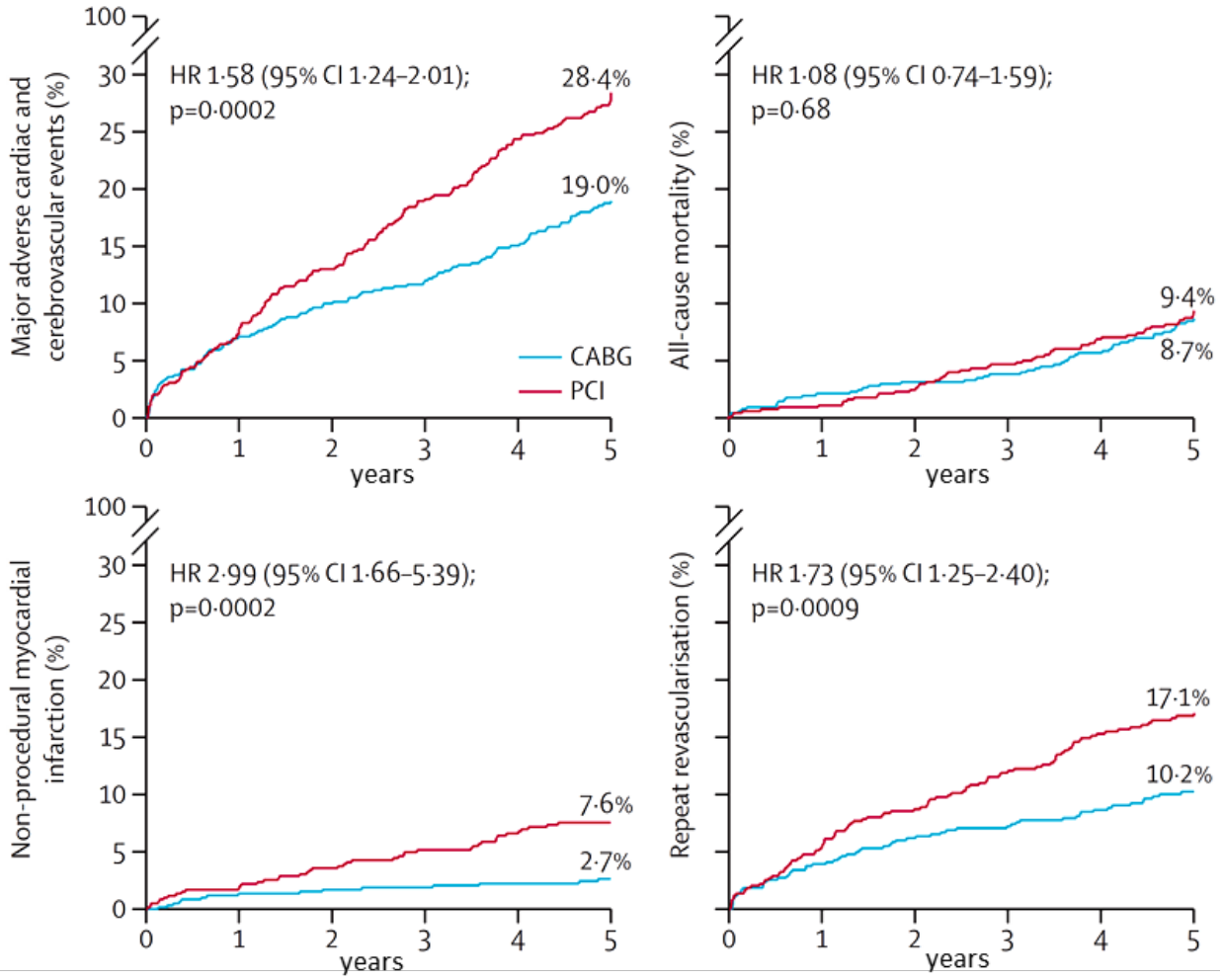
The prospective, randomised, open-label, non-inferiority NOBLE trial was done at 36 hospitals in nine northern European countries. Patients with left main coronary artery disease requiring revascularisation were enrolled and randomly assigned (1:1) to receive PCI or CABG. The primary endpoint was major adverse cardiac or cerebrovascular events (MACCE), a composite of all-cause mortality, non-procedural myocardial infarction, repeat revascularisation, and stroke. Non-inferiority of PCI to CABG was defined as the upper limit of the 95% CI of the hazard ratio (HR) not exceeding 1·35 after 275 MACCE had occurred. Secondary endpoints included all-cause mortality, non-procedural myocardial infarction, and repeat revascularisation. Outcomes were analysed in the intention-to-treat population. This trial is registered with ClinicalTrials.gov, NCT01496651.

FINDINGS

Between Dec 9, 2008, and Jan 21, 2015, 1201 patients were enrolled and allocated to PCI (n=598) or CABG (n=603), with 17 subsequently lost to early follow-up. 592 patients in each group were included in this analysis. At a median of 4·9 years of follow-up, the predefined number of events was reached for adequate power to assess the primary endpoint. Kaplan-Meier 5-year estimates of MACCE were 28% (165 events) for PCI and 19% (110 events) for CABG (HR 1·58 [95% CI 1·24-2·01]); the HR exceeded the limit for non-inferiority of PCI compared to CABG. CABG was found to be superior to PCI for the primary composite endpoint (P=0·0002). All-cause mortality was estimated in 9% after PCI versus 9% after CABG (HR 1·08 [95% CI 0·74-1·59]; P=0·68); non-procedural myocardial infarction was estimated in 8% after PCI versus 3% after CABG (HR 2·99 [95% CI 1·66-5·39]; P=0·0002); and repeat revascularisation was estimated in 17% after PCI versus 10% after CABG (HR 1·73 [95% CI 1·25-2·40]; P=0·0009).

INTERPRETATION

In revascularisation of left main coronary artery disease, PCI was associated with an inferior clinical outcome at 5 years compared with CABG. Mortality was similar after the two procedures but patients treated with PCI had higher rates of non-procedural myocardial infarction and repeat revascularisation.


Major adverse cardiac and cerebrovascular events (%)
HR 1·58 (95% CI 1·24–2·01); p=0·0002
28·4%
19·0%
CABG
PCI
years
All-cause mortality (%)
HR 1·08 (95% CI 0·74–1·59); p=0·68
9·4%
8·7%
years
Non-procedural myocardial infarction (%)
HR 2·99 (95% CI 1·66–5·39); p=0·0002
7·6%
2·7%
years
Repeat revascularisation (%)
HR 1·73 (95% CI 1·25–2·40); p=0·0009
17·1%
10·2%
years

J Am Coll Cardiol 2020;75:590–604

Trombose tardia é em torno de 2% ao ano, após implante de stent farmacológico, aponta metanálise de 19 ensaios randomizados

Stent-related adverse Events >1 year after percutaneous coronary intervention

OBJECTIVES

The purpose of this study was to assess the frequency and predictors of very-late stent--related events or MACE by stent type.

METHODS

Individual patient data from 19 prospective, randomized metallic stent trials maintained at a leadingacademic research organization were pooled. Very-late MACE (a composite of cardiac death, myocardial infarction [MI], or ischemia-driven target lesion revascularization [ID-TLR]), and target lesion failure (cardiac death, target-vessel MI, or ID-TLR) were assessed within year 1 and between 1 and 5 years after PCI with bare-metal stents (BMS), first-generation drug-eluting stents (DES1) and second-generation drug-eluting stents (DES2). A network meta-analysis was performed direct and indirect comparisons.

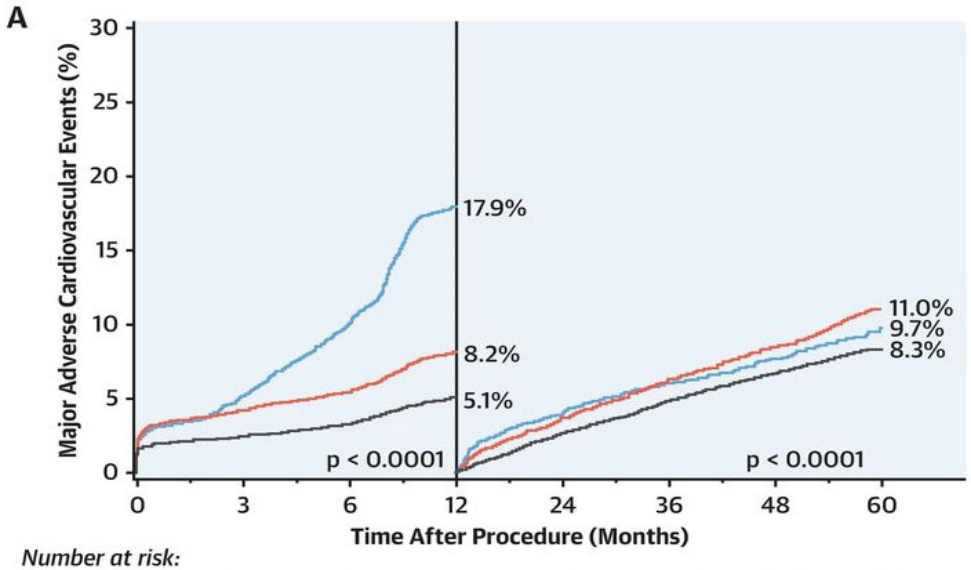
RESULTS

Among 25,032 total patients, 3,718, 7,934, and 13,380 were treated with BMS, DES1, and DES2, respectively.MACE rates within 1 year after PCI were progressively lower after treatment with BMS versus DES1 versus DES2 (17.9% vs. 8.2% vs. 5.1%, respectively, P<0.0001). Between years 1 and 5, very-late MACE occurred in 9.4% of patients (including 2.9% cardiac death, 3.1% MI, and 5.1% ID-TLR). Very-late MACE occurred in 9.7%, 11.0%, and 8.3% ofpatients treated with BMS, DES1, and DES2, respectively (P<0.0001), linearly increasing between 1 and 5 years. Similarfindings were observed for target lesion failure in 19,578 patients from 12 trials. Findings were confirmed in the network meta-analysis

CONCLUSIONS

In this large-scale, individual patient data pooled study, very-late stent-related events occurred between 1 and 5 years after PCI at a rate of ~2%/year with all stent types, with no plateau evident. New approaches are required to improve long-term outcomes after PCI.

CENTRAL ILLUSTRATION: Very-Late Stent-Related Cardiovascular Events



Number at risk:

BMS	3,718	3,506	3,309	2,984	2,811	2,497	2,029	746
DES1	7,934	7,543	7,403	7,112	6,707	5,595	3,688	1,757
DES2	13,380	13,003	12,853	12,502	11,998	11,080	5,848	3,523

Variação nas características e na mortalidade da revascularização miocárdica, cirúrgica ou percutânea, nos EUA: análise de 12 milhões de intervenções

Trends in Characteristics and Outcomes of Patients Undergoing Coronary Revascularization in the United States, 2003-2016

OBJECTIVE

To assess the contemporary trends in the characteristics and outcomes of patients undergoing PCI or CABG in the United States.

DESIGN, SETTING, AND PARTICIPANTS

This retrospective cohort study used a national inpatient claims-based database to identify patients undergoing PCI or CABG from January 1, 2003, to December 31, 2016. Data analysis was performed from July 15 to October 4, 2019.

MAIN OUTCOMES AND MEASURES

Demographic characteristics, prevalence of risk factors, and clinical presentation divided into 3 eras (2003-2007, 2008-2012, and 2013-2016) and in-hospital mortality of PCI and CABG stratified by clinical indication.

RESULTS

A total of 12 062 081 revascularization hospitalizations were identified: 8 687 338 PCIs (72.0%; mean [SD] patient age, 66.0 [10.8] years; 66.2%male) and 3 374 743 CABGs (28.0%; mean [SD] patient age, 64.5 [12.4] years; 72.1% male). The annual PCI volume decreased from 366 to 180 per 100 000 US adults and the annual CABG volume from 159 to 82 per 100 000 US adults. A temporal increase in the proportions of older, male, nonwhite, and lower-income patients and in the prevalence of atherosclerotic and nonatherosclerotic risk factors was found in both groups. The percentage of revascularization formyocardial infarction (MI) increased in the PCI group (22.8%to 53.1%) and in the CABG group (19.5%to 28.2%). Risk-adjusted mortality increased slightly after PCI
for ST-segment elevation MI (4.9%to 5.3%; P<.001 for trend) and unstable angina or stable ischemic heart disease (0.8%to 1.0%; P<.001 for trend) but remained stable after PCI for non–STsegment elevation MI (1.6%to 1.6%; P=.18 for trend). Risk-adjusted CABG morality markedly decreased in patients with MI (5.6%to 3.4%for all CABG and 4.8%to 3.0% for isolated CABG) and in those without MI (2.8%to 1.7%for all CABG and 2.1% to 1.2%for isolated CABG) (P<.001 for all).

CONCLUSIONS AND RELEVANCE

Significant changes were found in the characteristics of patients undergoing PCI and CABG in the United States between 2003 and 2016. Risk-adjusted mortality decreased significantly after CABG but not after PCI across all clinical indications.

Figure 1. Temporal Trend in the Annual Rate of Percutaneous and Surgical Coronary Revascularization per 100 000 US Adults

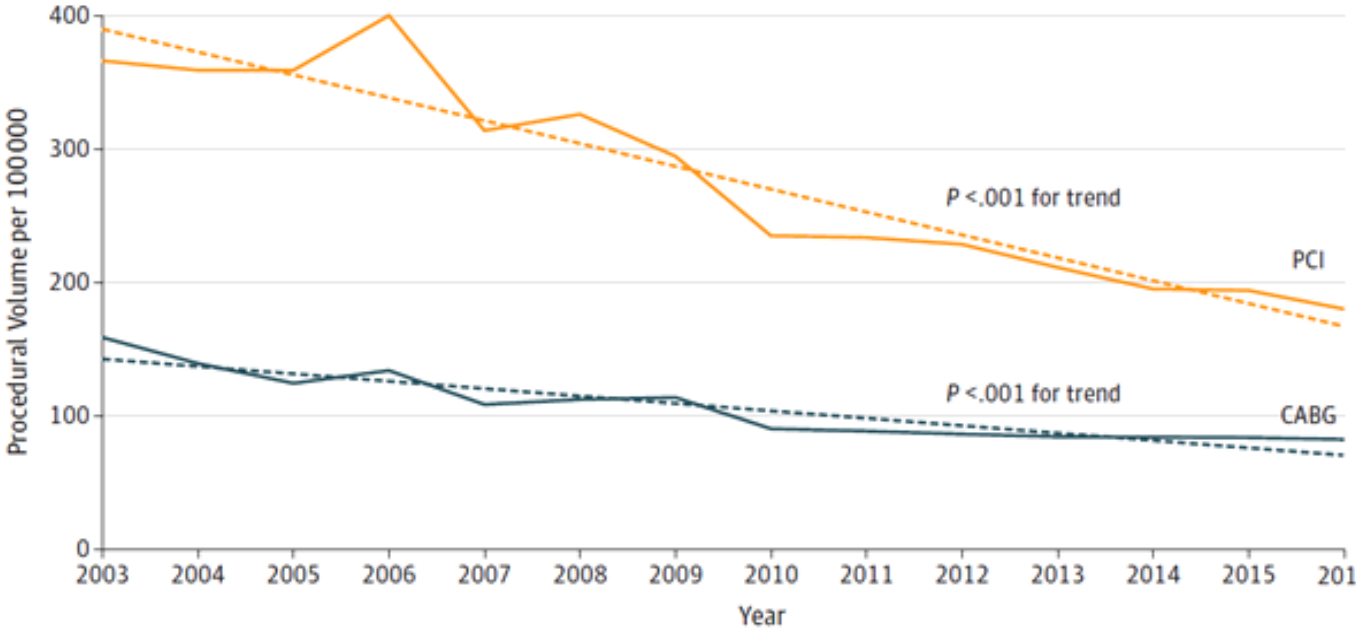
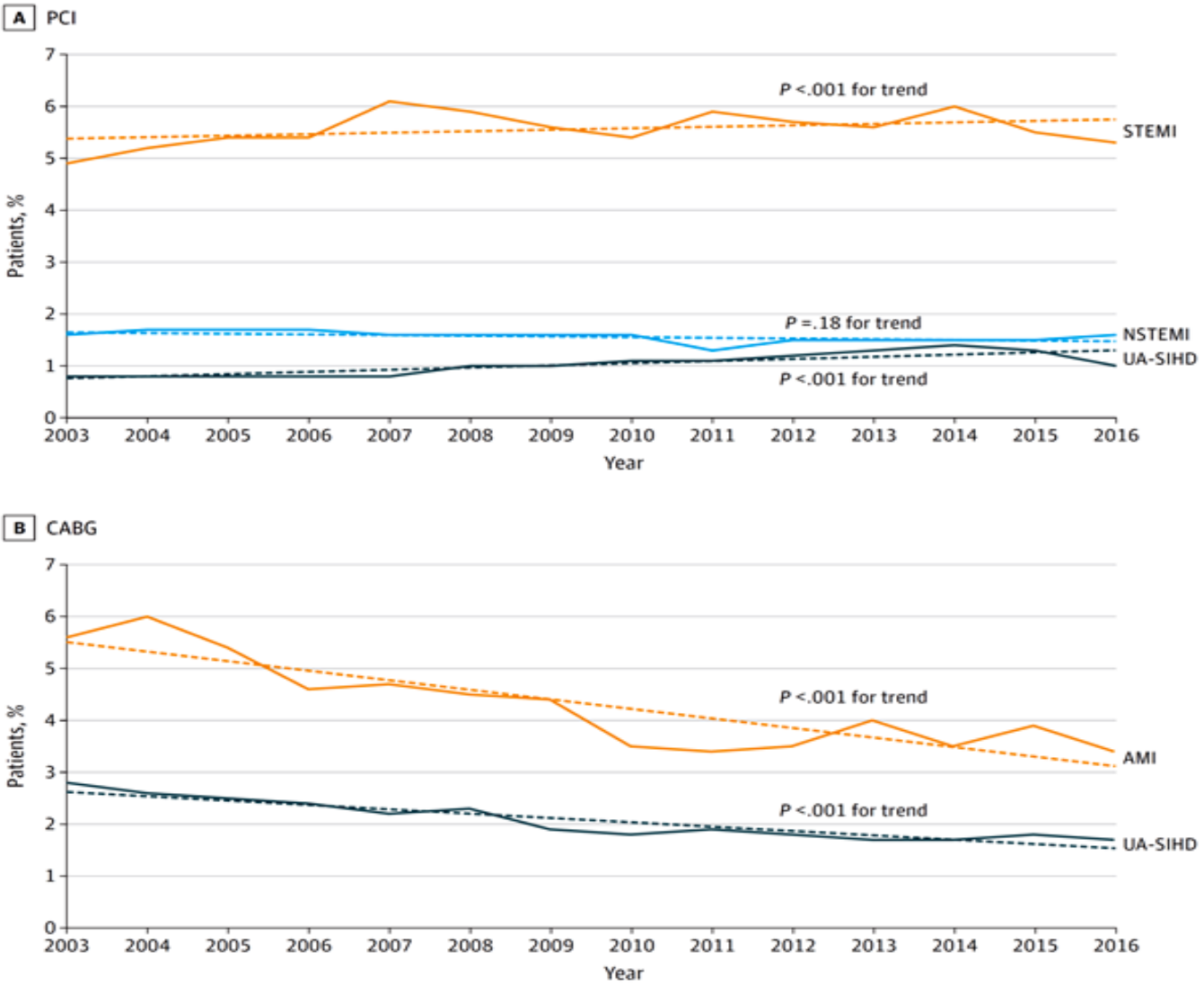


Figure 2. Temporal Trend in the Risk-Adjusted In-Hospital Mortality With Coronary Revascularization Stratified by Clinical Indication



JAMA. Feb 10, 2020. DOI:10.1001/jama.2020.0254

Registro aponta maior mortalidade e complicações com o dispositivo IMPELLA, em comparação ao balão intraórtico, em pacientes com choque cardiogênico

Association of use of an intravascular microaxial left ventricular assist device vs intra-aortic balloon pump with in-hospital mortality and major bleeding among patients with acute myocardial infarction complicated by cardiogenic shock

EXPOSURES

Hemodynamic support, categorized as intravascular microaxial LVAD use only, IABP only, other (such as use of a percutaneous extracorporeal ventricular assist system, extracorporeal membrane oxygenation, or a combination of MCS device use), or medical therapy only.

MAIN OUTCOMES AND MEASURES

The primary outcomeswere in-hospital mortality and in-hospital major bleeding.

RESULTS

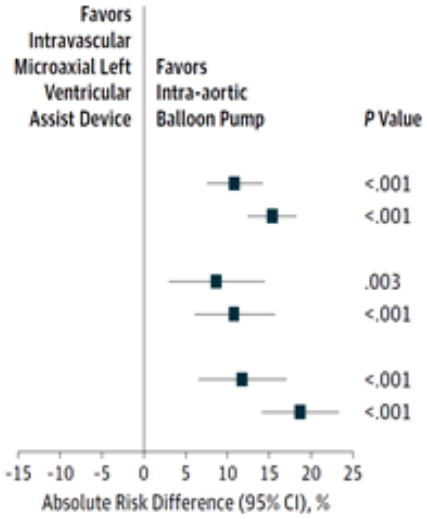
Among 28 304 patients undergoing PCI for AMI complicated by cardiogenic shock, the mean (SD) age was 65.0 (12.6) years, 67.0%were men, 81.3% had an ST-elevation myocardial infarction, and 43.3%had cardiac arrest. Over the study period among patients with AMI, an intravascular microaxial LVAD was used in 6.2%of patients, and IABP was used in 29.9%. Among 1680 propensity-matched pairs, there was a significantly higher risk of in-hospital death associated with use of an intravascular microaxial LVAD (45.0%) vs with na IABP (34.1%[absolute risk difference, 10.9 percentage points {95%CI, 7.6-14.2}; P<.001) and also higher risk of in-hospital major bleeding (intravascular microaxial LVAD [31.3%] VS IABP [16.0%]; absolute risk difference, 15.4 percentage points [95%CI, 12.5-18.2]; P<.001). These associations were consistent regardless of whether patients received a device before or after initiation of PCI.

CONCLUSIONS AND RELEVANCE

Among patients undergoing PCI for AMI complicated by cardiogenic shock from 2015 to 2017, use of an intravascular microaxial LVAD compared with IABP was associated with higher adjusted risk of in-hospital death and major bleeding complications, although study interpretation is limited by the observational design. Further research may be needed to understand optimal device choice for these patients.

Figure 2. In-Hospital Outcomes Among Propensity-Matched Patients With Acute Myocardial Infarction Complicated by Cardiogenic Shock Undergoing Percutaneous Coronary Intervention With Intravascular Microaxial Left Ventricular Assist Device vs Intra-aortic Balloon Pump

	Intravascular Microaxial Left Ventricular Assist Device		Intra-aortic Balloon Pump		Absolute Risk Difference (95% CI), %	P Value
	No. of Patients	Patients, %	No. of Patients	Patients, %		
Overall (n = 1680 matched pairs)						
Mortality	756	45.0	573	34.1	10.9 (7.6-14.2)	<.001
Major bleeding	526	31.3	268	16.0	15.4 (12.5-18.2)	<.001
Device placement before initiation of percutaneous coronary intervention (n = 573 matched pairs)						
Mortality	261	45.5	211	36.8	8.7 (3.1-14.4)	.003
Major bleeding	157	27.4	95	16.6	10.8 (6.1-15.6)	<.001
Device placement after initiation of percutaneous coronary intervention (n = 662 matched pairs)						
Mortality	291	44.0	213	32.2	11.8 (6.6-17.0)	<.001
Major bleeding	228	34.4	104	15.7	18.7 (14.2-23.3)	<.001



J Am Coll Cardiol Intv 2020;13:219–31

Relação entre índices de fragilidade e sobrevida, após implante transceteter de válvula aórtica (TAVI)

The effect and relationship of frailty indices on survival after transcatheter aortic valve replacement

BACKGROUND

Appropriate patient selection for TAVR remains a dilemma, especially among the most elderly and potentially frail.

METHODS

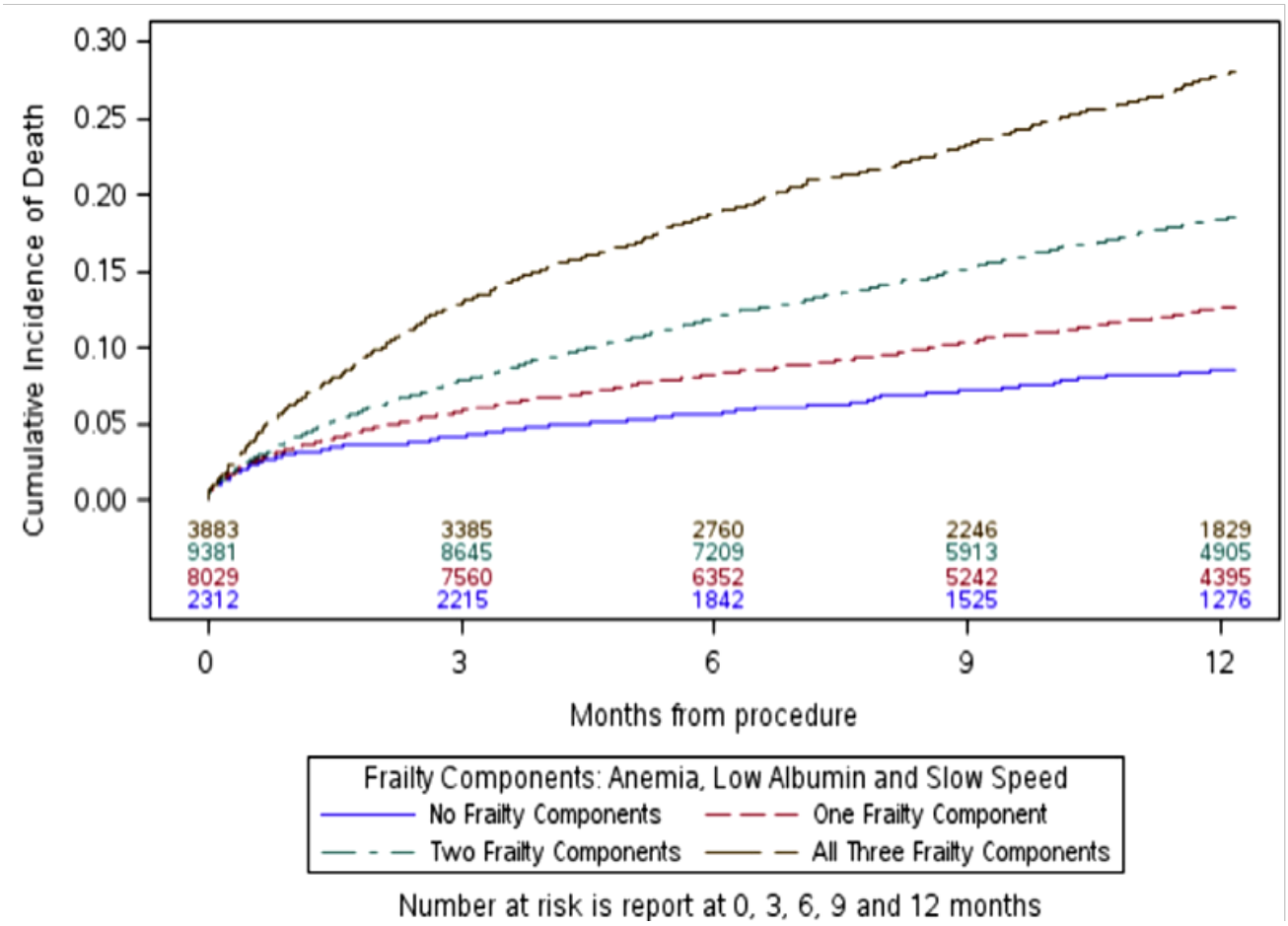
The study evaluated patients $65 years of age in the Society of Thoracic Surgeons/American College of Cardiology Transcatheter Valve Therapy registry, linked to Centers for Medicare and Medicaid administrative claims data, receiving elective TAVR from November 2011 to June 2016 (n ¼ 36,242). Indices of frailty included anemia, albumin level, and 5-m walk speed. We performed Cox proportional hazards regression for 30-day and 1-year mortality, adjusting for risk factors known to be predictive of 30-day mortality in the Transcatheter Valve Therapy registry, as well as survival analysis.

RESULTS

These indices are independently associated with mortality at 30 days and 1 year and provide incremental value in risk stratification for mortality, with low albumin providing the largest value (hazard ratio: 1.52). Those with low
albumin and slower walking speed had longer lengths of stay and higher rates of bleeding and readmission (P<0.001). Those with anemia also had higher rates of bleeding, readmission, and subsequent myocardial infarction (P<0.001).

CONCLUSIONS

This represents the largest study to date of the role of frailty indices after TAVR, further facilitating robust modeling and adjusting for a large number of confounders. These simple indices are easily attainable, and clinically relevant markers of frailty that may meaningfully stratify patients at risk for mortality after TAVR.


Cumulative Incidence of Death
0.30
0.25
0.20
0.15
0.10
0.05
0.00
3883
9381
8029
2312
3385
8645
7560
2215
2760
7209
6352
1842
2246
5913
5242
1525
1829
4905
4395
1276
0
3
6
9
12
Months from procedure
Frailty Components: Anemia, Low Albumin and Slow Speed
No Frailty Components
One Frailty Component
Two Frailty Components
All Three Frailty Components
Number at risk is report at 0, 3, 6, 9 and 12 months

N Engl J Med 2020;382:120-9

Estudo GALILEO: rivaroxaban está relacionado a maior risco de morte, tromboembolismo e complicações hemorrágicas, do que a terapia antiplaquetária, após TAVI

A controlled Trial of Rivaroxaban after transcatheter aortic-valve replacement

BACKGROUND

Whether the direct factor Xa inhibitor rivaroxaban can prevent thromboembolic events after transcatheter aortic-valve replacement (TAVR) is unclear.

METHODS

We randomly assigned 1644 patients without an established indication for oral anticoagulation after successful TAVR to receive rivaroxaban at a dose of 10 mg daily (with aspirin at a dose of 75 to 100 mg daily for the first 3 months) (rivaroxaban group) or aspirin at a dose of 75 to 100 mg daily (with clopidogrel at a dose of 75 mg daily for the first 3 months) (antiplatelet group). The primary efficacy outcome was the composite of death or thromboembolic events. The primary safety outcome was major, disabling, or life-threatening bleeding. The trial was terminated prematurely by the data and safety monitoring board because of safety concerns.

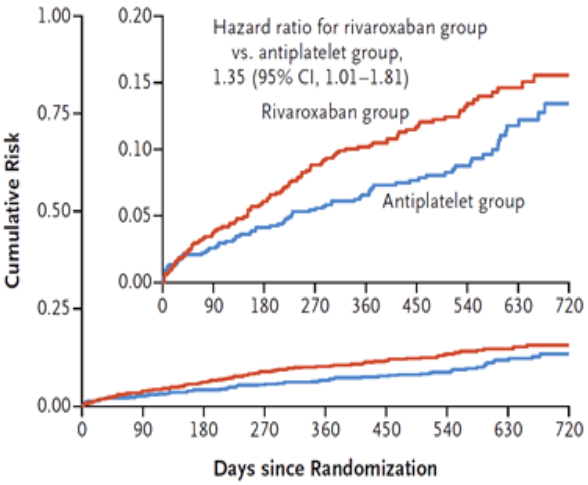
RESULTS

After a median of 17 months, death or a first thromboembolic event (intention-to-treat analysis) had occurred in 105 patients in the rivaroxaban group and in 78 patients in the antiplatelet group (incidence rates, 9.8 and 7.2 per 100 person-years, respectively; hazard ratio with rivaroxaban, 1.35; 95% confidence interval [CI], 1.01 to 1.81; P=0.04). Major, disabling, or life-threatening bleeding (intention-to-treat analysis) had occurred in 46 and 31 patients, respectively (4.3 and 2.8 per 100 person-years; hazard ratio, 1.50; 95% CI, 0.95 to 2.37; P=0.08). A total of 64 deaths occurred in the rivaroxaban group and 38 in the antiplatelet group (5.8 and 3.4 per 100 personyears, respectively; hazard ratio, 1.69; 95% CI, 1.13 to 2.53).

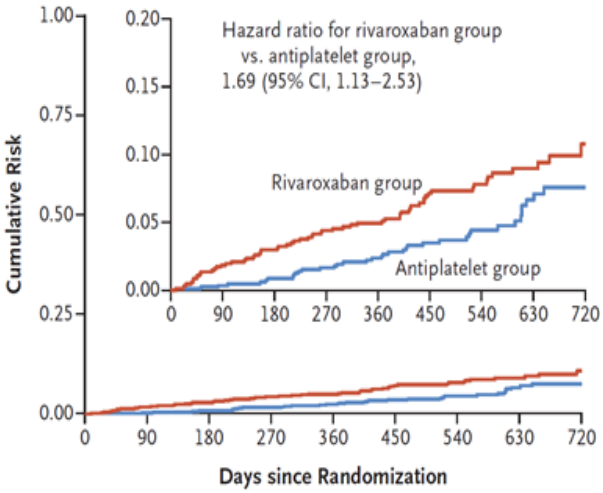
CONCLUSIONS

In patients without an established indication for oral anticoagulation after successful TAVR, a treatment strategy including rivaroxaban at a dose of 10 mg daily was associated with a higher risk of death or thromboembolic complications and a higher risk of bleeding than an antiplatelet-based strategy.

Primary Efficacy Outcome



Death from Any Cause



Editorial questiona resultados tardios do tratamento endovascular do aneurisma de aorta adbominal, à luz dos estudos com seguimento estendido

Is This the End for EVAR ?

The endovascular aneurysm repair (EVAR) trials showed conclusively the significant initial benefit of EVAR compared to standard open surgical repair, in particular better 30 day mortality of 1.6 vs. 4.7% and lower major cardiac, respiratory, haemorrhagic and renal complications. These results were replicated by several other studies in different healthcare systems including the OVER, DREAM and ACE trials. This of course was not surprising given the less invasive nature of the new procedure.

However, the long term follow-up data from some of the original EVAR trials have started to show some disturbing results. The 3% early EVAR survival benefit is lost by 4 years, and between 8 and 14 years there is a survival benefit to open surgery. This is as a result of an increase in both aneurysm related and overall mortality in the EVAR group. Late aortic ruptures account for the former and concerns regarding an increase in abdominal malignancies due at least in part to increased radiation exposure caused by numerous follow-up CT-examinations may have contributed to the latter. In addition, costs have been shown to be significantly higher due in part to the need for continued follow-up and higher reintervention rates of around 16%. When NICE did their costings using data from the ACE, DREAM and EVAR trials, the incremental cost-effectiveness ratio (ICER) was between £48,990 and 2.8 million per quality of life gain (QALY). The OVER trial was the only study assessed in isolation to show the potential to meet the £20,000 per QALY threshold with a high probability of 91% . NICE's calculations, however, using all the available trials data, showed a\1% probability of achieving this.

Proponents of EVAR argue that the trial data are historical and that both contemporary practice and today's devices have improved sufficiently to make the outcomes mentioned above obsolete. The appreciation of the need for a more proximal seal zone, a reduction in intervention for all type II endoleaks and moving to duplex surveillance may have na impact, but to date there is no high level evidence to support such claims.

This has led to the recent controversial draft NICE guidelines on AAA management, where EVAR is no longer recommended for unruptured aneurysms and only in the context of research studies for juxta-renal or supra-renal aneurysms. NICE guidelines are highly valued and respected throughout the world so although this so far has only been released for consultation, it has resulted in a huge impact and major negative response from the world medical community.

Whether we accept the NICE draft guidelines or not, there are some valuable lessons to take on board. The peak of EVAR exuberance has probably passed, at least for the current device iteration, and its continued use must be tempered to take account of durability. We need to ensure that training still reflects a future (at least for now) need for open surgery for some patients and accept that such procedures will be technically more difficult. Further centralisation and the proposed LANs may facilitate this. We also need to identify those patients who will not benefit from treatment either because of limited life expectancy or because of comorbidities. Although clearly sensible on a population basis, this is harder to apply to an individual

patient and we will need to develop strategies to manage patient expectations and concerns. Longer term we need to re-evaluate the EVAR concept. The goal is to prevent or effectively treat acute aneurysm rupture with minimal harm to the patient. Certainly, re-lining the aorta with a prosthetic introduced endoluminally remains a very attractive option and is likely to be the way forward, but the current strategy of fixation and radial force without sac management is unlikely to improve outcomes in adverse anatomy. The majority of devices currently available are developments of this original concept and the one deviation away from it (using polymer filled bags in the aneurysm sac) was found wanting. Future devices will need to change and adapt to our knowledge of neck dilatation and changes within the sac overtime. The drive should be towards ideally obliteration of the space within the aortic sac rather than with sac size stability.

In conclusion this is not the end for EVAR—there are patient groups that will benefit with today's technology and we durability. Crucially, this will enable continued research and development to produce the next iteration of the EVAR concept that will hopefully address some of the current inadequacies.

The future may well be endovascular, but it is not yet clear when that will be. In the interim, we need to ensure we have surgeons who can still continue to operate in these challenging patients.